

Neuroscience at the New Millennium Implementation Update May 2000

Introduction

“Neuroscience at the New Millennium” presents the strategic plan for the National Institute of Neurological Disorders and Stroke (NINDS). This supplement describes the actions NINDS is taking to implement our strategic plan. Because planning is a dynamic process that is integral to the operation of the Institute, this document can only offer a snapshot of activities as of May 2000.

The planning process began in the fall of 1998. Following consultation with the National Advisory Neurological Disorders and Stroke Council, NINDS convened leaders from the scientific community, together with patient advocates and NINDS staff, to assess needs, opportunities, and priorities in several cross-cutting scientific areas. The seven panels focused on *Neurodegeneration; Neurogenetics; Channels, Synapses and Circuits; Cognition and Behavior; Neurodevelopment; Plasticity and Repair; Glia and Other Non-Neuronal Cells; and Experimental Therapeutics and Clinical Trials*. The panel reports shaped the first draft of the NINDS strategic plan. NINDS posted the draft on the internet and solicited comments from more than 250 patient advocacy groups and professional scientific organizations. The NINDS director and staff continue to meet with these groups, and the Institute is actively engaged in efforts to enhance its partnership with private organizations. Meetings of the planning panels are also continuing, both to discuss specific implementation proposals and to consider new opportunities and issues arising within the rapidly changing landscape of neuroscience research. As the planning process continues, NINDS will present new iterations of the strategic plan at regular intervals.

In order to more effectively carry out its mission, NINDS has reorganized its extramural staffing. The new structure groups program directors into clusters that reflect the themes around which the planning process coalesced. All diseases clearly cross cluster boundaries. Individual program directors will maintain a focus on particular diseases within this structure, while the cluster themes foster cross fertilization that has become central to progress against all disorders. The more level organizational structure promotes staff initiative and communication. New positions are spearheading important cross-cutting efforts in technology development, clinical trials and experimental therapeutics. NINDS is also undertaking extensive efforts to recruit high caliber scientist-administrators to guide these efforts, with several new program directors already in place to replace retirees and to fill new positions.

NINDS has always relied heavily on the insight and ingenuity of scientists throughout the country to identify research needs and opportunities. The Institute continues its emphasis on investigator initiated research with the strong endorsement of the NINDS Advisory Council and of the planning panels. In FY1999, the success rate for new and competing centers and research project grants rose to over 35%, and NINDS funded more than 400 new grants for a total portfolio of about 2,200 projects. Importantly, every indication is that the high scientific quality

of these grants is not diminished. The excitement of neuroscience is drawing many established scientists, graduate students and post-doctoral students to the frontiers of brain research, but the Institute must be vigilant to maintain a talented scientific workforce and a balanced program.

While NINDS relies heavily on investigator initiated research, the Institute undertakes specific initiatives to focus efforts on particular problems or opportunities when Institute leadership is warranted. The current favorable funding environment has enabled NINDS to aggressively seek to catalyze progress, while maintaining the success rates sufficient to sustain the health of the scientific enterprise. The specific initiatives described in the following sections, together with the increase in new grants, would not be possible in more constrained fiscal circumstances.

Examples of Strategic Initiatives

While we are implementing all areas of our strategic plan (see remainder of this supplement), a few examples will illustrate the range of activities NINDS is undertaking to carry out the plan.

Parkinson's Disease Research Agenda

Recent advances in understanding the causes of Parkinson's disease, and the possibility of new treatment options, has brought a renewed sense of optimism that Parkinson's disease can be cured, or treated more effectively, in the not too distant future. In late 1999, NINDS, together with several other NIH Institutes and patient advocacy groups, initiated an intensive planning process to develop a research agenda for Parkinson's disease. A workshop was held this past January at which intramural, extramural and industry scientists, together with patient advocates and ethicists, identified opportunities for moving the field forward towards a cure. In March, a five year plan based on the workshop recommendations was published, and NINDS is currently working to implement this plan. Already, several solicitations for research proposals have been issued, including ones on the role of parkin and related proteins in Parkinson's disease, mitochondrial function and neurodegeneration, and the function of synaptic proteins in synapse loss and neurodegeneration. In addition, NINDS has established 11 Morris K. Udall Centers of Excellence in Parkinson's Disease research. These centers meet regularly to coordinate activities, and will be critical to fostering the type of cross disciplinary efforts needed to implement the plan. It is important to note that while the research agenda is focused on Parkinson's disease, the knowledge gained from it will have relevance for all forms of neurodegenerative disease.

Deep Brain Stimulation

The scientific community has responded enthusiastically to an NINDS solicitation for research on deep brain stimulation. Proposals range from technology development through clinical trials for Parkinson's disease. Deep brain stimulation is a potentially revolutionary therapeutic approach that may apply to many brain disorders in addition to Parkinson's Disease.

Epilepsy

This past March, NINDS, together with several patient advocacy groups, sponsored a White House-initiated conference, "Curing Epilepsy: Focus on the Future." This conference brought together leading scientists with representatives from government, industry, healthcare organizations, and patient groups, to discuss research advances and stimulate creative thinking as

to what exciting and innovative discoveries are likely to lead to the prevention and cure of epilepsy. Cure is defined as "the prevention of epilepsy before it occurs in people at risk, and the cessation of seizures and other symptoms without therapy-associated side effects in those who develop the disease." Major topics for discussion included interrupting seizure development, using genetic strategies, and developing new therapies. NINDS is currently convening a planning group to develop a 5 year research agenda based on the recommendations that came out of the conference.

In order to encourage new approaches to curing epilepsy, NINDS, together with the Epilepsy Foundation and the American Epilepsy Society, awarded 48 travel supplements for young investigators to attend the White House conference and learn about a new NINDS initiative for Exploratory/Developmental Grants for "Innovation in Translational Epilepsy Research for Junior Investigators." The purpose of this initiative is to bring together promising junior investigators with interest in patient-oriented research, developmental neurobiology, genetics, advanced technology, imaging, pharmacotherapeutics, and other disciplines to develop innovative research proposals related to the field of epilepsy.

Reducing Health Disparities

NINDS has developed and is implementing a five year strategic plan to reduce the burdens borne by populations at increased risk for diseases and disorders of the brain, spinal cord, and peripheral nervous system. Minority populations are typically at greater risk for stroke, epilepsy, neurological complications of AIDS and diabetes, traumatic brain/spinal cord injury, and developmental disorders, including those associated with low birthweight. Progress against these disorders will be greatly enhanced by the existence of a strong cadre of minority investigators and institutions who are fully engaged in research and health care. In collaboration with other NIH Institutes and Centers, NINDS is cooperating with minority medical and graduate schools to develop state-of-the-art basic and clinical neuroscience programs, including sustainable, replicable and culturally appropriate prevention and/or intervention programs in areas such as stroke and HIV/AIDS.

Infrastructure supplements

In FY1999 NINDS offered an innovative program of supplements targeted to support critical infrastructure needs. The Institute invited current grantees to apply, with a brief application and rapid turn-around, for needed equipment costing up to \$50,000 for single investigators or \$200,000 for groups. The overwhelming response rate, from more than 90% of grantees, and the quality of the justifications presented, highlight the unmet needs that have accumulated in laboratories following many years of budgetary constraints. The NINDS Advisory Council and the Planning Panels have strongly endorsed this program as a cost-effective means to ensure that research is not hampered by the lack of equipment essential to day-to-day research efforts. NINDS plans to continue this program of infrastructure supplements in FY2000.

DNA Microarray Analysis supplements

Almost half of all human genes are expressed in the brain. Understanding the differential expression of these genes will greatly increase our understanding of both normal brain function and neurological disease. To facilitate this effort, NINDS has recently announced a program of supplements to increase access to DNA microarray technology. Increased access to microarrays

was a major recommendation of almost all of the Planning Panels. This effort, modeled on the highly successful general infrastructure supplement program (see above), will provide funds for the use and analysis of DNA microarrays of up to \$50,000 for single investigators or \$100,000 for program projects. In addition, NINDS is developing an initiative for microarray centers for research on the nervous system. These centers would provide a source of neuroscience-specific, quality-controlled microarrays, and a range of services to facilitate access to the use of arrays for NINDS grantees.

Workshop Series on “New Strategies in Spinal Cord Injury”

About 200,000 Americans are confined to wheelchairs because of spinal cord injury (SCI). Each year, more than 10,000 new serious spinal cord injuries occur, with two-thirds of the victims being under the age of 30. NINDS has recently initiated a series of small, focused, multidisciplinary workshops to review recent research advances, explore new mechanisms, and develop novel strategies for the treatment of different aspects of acute and chronic SCI. Each workshop brings together SCI scientists, experts in related or relevant fields, and patient advocates to focus on a specific topic in the recovery process. Topics will include inflammation and cell responses following SCI, barriers to regeneration in SCI, synapse formation and plasticity in regenerating systems, cell and gene therapy in the damaged spinal cord, the role of rehabilitation and neural prostheses, and the development of improved imaging and clinical outcome measures for SCI. The first workshop in the series was held this past April, and others are planned on a regular basis over the next year and a half.

Intramural Neuroscience Program

The NIH intramural program provides unique opportunities for interdisciplinary collaborations, for long-term studies, and for rapid response to problems of special urgency. The unique advantages of the NIH Clinical Center for clinical research are becoming even more valuable in today's health care environment. The NIH intramural neuroscience program is well on its way towards regaining its position of world leadership in quality and in integration of the many scientific perspectives that must be brought to bear on problems of the brain. Efforts spearheaded by NINDS and NIMH Scientific Directors have recruited outstanding scientists, at senior and junior levels, and the entire enterprise has prospered under new procedures for recruitment and tenure of independent investigators. Funding for a new Neuroscience Center has been included in the President's FY2001 budget, which when built will at last provide an environment conducive to modern integrated neuroscience research.

Promoting Early Stroke Treatment

NINDS was instrumental in the development of tPA (tissue plasminogen activator), the first FDA approved acute treatment for ischemic stroke. Now that emergency treatment for stroke has been proven possible, NINDS will continue to build on this success with expanded efforts to educate the public and health care providers about new stroke treatment opportunities and by continuing research to develop better treatments. As part of this effort the NINDS Intramural program is collaborating with NHLBI and Suburban Hospital (a local community hospital) to form a comprehensive multidisciplinary stroke care program. Doctors at Suburban will use the latest MRI imaging technology to rapidly diagnose individuals presented with ischemic stroke so that tPA treatment can be begun immediately. Researchers will utilize the MRI technology in

clinical trials aimed at identifying and evaluating new therapies that permanently reduce the brain damage caused by stroke.

NINDS/NCI Brain Tumor Progress Review Group

The NINDS is working together with the National Cancer Institute (NCI) to support basic, clinical, and population-based research to identify and study the causes, biology, prevention, early detection and treatment of brain tumors. Years of research support have resulted in a large knowledge base about neoplastic disease that, together with new technologies, presents a wealth of exciting scientific opportunities. In order to best exploit these opportunities, the NINDS and NCI have organized a Progress Review Group (PRG) for brain tumor research. This joint PRG, modeled on NCI's PRG efforts in other cancer areas, will identify scientific priority areas in brain tumor research, provide a framework to determine whether existing initiatives address these priority areas, and galvanize the research community to undertake projects in the identified priority areas.

Trans-NIH Coordination

Our implementation efforts are not taking place in a vacuum. Rather, they must be integrated within the larger strategic planning effort taking place across the NIH campus. Many of our current and planned initiatives cross disciplinary boundaries, and we will make every effort to collaborate with other NIH Institutes and Centers in areas of common interest. We continue to participate in several important NIH-wide activities, including human, rat, mouse, and zebrafish genomic projects. In addition, we either lead or participate with our fellow Institutes on several trans-NIH coordinating committees including the NIH Pain Research Consortium; the Parkinson's Disease Coordinating Committee; the Alzheimer's Disease Coordinating Committee; the NIH Autism Coordinating Committee; the Autoimmunity Coordinating Committee; the NIH Bioengineering Consortium; the NIH Biomedical Information Science and Technology Initiative; the NIH Consensus Conference and Technology Transfer Coordinating Committee; and other committees covering prevention, behavioral and social sciences research. Finally, our program directors interact on a daily basis with their colleagues at other NIH Institutes in areas of common interest to ensure that our collective resources are utilized productively.

Implementation Activities

The remainder of this document is organized around the topic areas contained in the accompanying strategic plan. Listed within each section are current initiatives, planned initiatives, and scientific workshops and conferences either recently held or planned for the coming year. Several of these efforts, as indicated, are cooperative efforts led by other components of NIH. In addition, an appendix lists all our current initiatives in date order for easy reference, along with specific reference numbers that will allow access to more complete information via the internet.

Neurodegeneration

NINDS encourages research into neurodegeneration over the entire life span.

Examples of disease areas covered include Alzheimer's Disease, Parkinson's Disease, Huntington's Disease, Friedreich's Ataxia, the spinocerebellar ataxias, amyotrophic lateral sclerosis (ALS), and stroke.

Recent and Ongoing Initiatives

- Morris K. Udall Parkinson's Disease Research Centers of Excellence
- Consortium on Deep Brain Stimulation for the Treatment of Parkinson's Disease and other Neurological Disorders
- Parkinson's Disease Patient Registry
- The Role of Parkin and Related Proteins in Parkinson's Disease
- Mitochondrial Function and Neurodegeneration
- The Function of Synaptic Proteins in Synapse Loss and Neurodegeneration

- The Role of the Environment in Parkinson's Disease, led by NIEHS
- The Role of the Environment in Parkinson's Disease: Career Development Programs for Physician-Scientists, led by NIEHS
- Alzheimer's Disease Clinical Trial Planning Grant, led by NIA
- Alzheimer's Disease Pilot Clinical Trials, led by NIA
- Xenobiotics and Cell Death/Injury in Neurodegenerative Disease, led by NIEHS
- public/private partnership for neurodegenerative disorders

Planned Initiatives

- Cognitive and Emotional Longitudinal Health Study
- Parkinson's Disease Physician Education Initiative
- We are actively exploring the best approach for encouraging the following areas: high throughput drug screening of treatments for neurodegenerative diseases, using invertebrate model organisms to study proteins involved in neurodegeneration, and efforts aimed at protein aggregation and polyglutamine toxicity.

Workshops

- Stroke Genetics Workshop (date pending)
- Cognitive and Emotional Health Longitudinal Study Meeting (date pending)
- Post-Resuscitation and Initial Utility in Life Saving Efforts (PULSE) (June 29-30-2000)
- Assays for High-Throughput Screening of Therapeutic Drug Candidates for Amyotrophic Lateral Sclerosis (ALS) and Spinal Muscular Atrophy (SMA) (April 10-11, 2000)
- Parkinson's Disease Center Investigators Meeting (March 3-4, 2000)
- Parkinson's Disease Research Agenda: Progress and Five Year Plan (January 4-6, 2000)
- Glioma Cell Biology Workshop (Summer 1999)
- Spinal Muscular Atrophy Workshop (May 1999)
- Parkinson's Disease Center Investigator's Meeting (March 1999)
- Deep Brain Stimulation for Parkinson's Disease Working Group (March 1999)

- Progressive Supranuclear Palsy International Meeting (March 1999)

Neural Development

NINDS plans and implements research on normal and abnormal neurodevelopment, disorders of the developing nervous system, and developmental processes whose dysfunction may lead to neurological disease in adulthood.

Examples of diseases covered include developmental disorders such as autism, Rett syndrome, Tourette syndrome, cerebral palsy and Down syndrome; malformations of brain and spinal cord; epilepsy; spinal muscular atrophy (SMA) and other childhood neurodegenerative disorders; the muscular dystrophies; Batten disease and other metabolic disorders (e.g., Tay-Sachs disease, Fabry's disease, Gaucher's disease, other storage diseases); Reye's syndrome; aminoacidurias; ataxia telangiectasia; and Friedreich's ataxia.

Recent and Ongoing Initiatives

- Developmental Pharmacology: Ontogeny of Drug Metabolizing Enzymes, Drug Transporters, Drug Receptors, and Ion Channels
- Exploratory Grants in Pediatric Brain Disorders: Integrating the Science
- Pediatric Neuroanatomic Study – Developmental Database of 0-18 years
- The Early Evaluation of Anticonvulsant Drugs
- Technologies For Gene Expression Analysis In The Nervous System
- High Throughput Analysis of Gene Expression Patterns in the Nervous System
- Spinal Muscular Atrophy, Amyotrophic Lateral Sclerosis, and Other Motor Neuron Disorders
- Rett Syndrome: Genetics, Pathophysiology, and Biomarkers, led by NICHD
- Research on Child Neglect, led by OBSSR
- Career Development Awards: Child Abuse and Neglect Research, led by NIMH
- Mutagenesis Screens/Phenotyping Tools for Zebrafish, with several ICs

Workshops

- Developing Quantitative Tools for Assessment of Movement Impairment in Children (date pending)
- Risk Factors for Autism (date pending)
- Cognitive and Emotional Health Longitudinal Study Meeting (date pending)
- Pediatric Stroke: Development of Strategies for Prevention and Management (September 18-20, 2000)
- Optical Imaging: Bench to Bedside (September 2000)
- 6th International Conference on Functional Mapping of the Human Brain: Functional Imaging in Development (June 2000)
- Cerebral Blood Flow and Developmental Metabolism (June 8-11, 2000)
- Hallovorden-Spatz Syndrome Workshop (May 19-20, 2000)
- Duchenne Muscular Dystrophy Workshop (May 15-17, 2000)

- Batten Disease: Gene Therapy Initiative Conference (May 8-9, 2000)
- Defining the Future of Neurofibromatosis Research (May 4-5, 2000)
- Brain Fatty Acid Uptake, Utilization, and Relevance to PBDS (March 2000)
- Symposium on Hereditary Spastic Paraplegias (March 2000)
- Genetic Basis for Brain Development and Dysfunction (March 18-22, 2000)
- Clinical Trial Design for Antiepileptogenic vs. Antiepileptic Agents (at American Epilepsy Society 1999 Annual Meeting, December 8, 1999)
- Neuronal Ceroid Lipofuscinoses Research Association Actions for Therapy Workshop (November 1999)
- Adaptive Learning: Interventions for Verbal and Motor Deficits (November 15-16, 1999)
- Treatments for People with Autistic Disorders: Research Perspectives (November 8-9, 1999)
- Neurobiology of Ataxia-Telangiectasia (A-T) (November 1999)
- Inter-Institute Invitational Conference on Coordinating Neuroimaging and Functional Paradigms for Understanding Pediatric Neurodevelopment (September 1999)
- Workshop on Optical Imaging (September 1999)
- Pediatric Functional Neuroimaging Workshop (June 1999)
- International Conference on Batten Disease (July 1999)
- International Sturge-Weber Syndrome Symposium (June 1999)
- NIRS as a Cerebral Function Monitor (May 1999)
- Spinal Muscular Atrophy (SMA) Workshop (May 1999)
- International Freidreich's Ataxia Conference (June 1999)
- Batten Disease Workshop: New Directions in Research for the Neuronal Ceroid Lipofuscinoses (April 1999)
- Future Genetic Strategies for Epilepsy (March 1999)
- Child Abuse and Neglect (February 1999)

Repair and Plasticity

NINDS plans and directs research on interventions to restore function in the damaged nervous system and conducts basic research on neural plasticity as it relates to repair following degenerative diseases, injury, and stroke.

Examples of disease areas covered include traumatic brain and spinal cord injury, stroke, and repair and plasticity aspects of neurodegenerative disorders.

Recent and Ongoing Initiatives

- Restoration of Hand and Arm Function by Functional Neuromuscular Stimulation
- Biomaterials for the Microelectrode-Neural Interface
- Thin-Film Intracortical Recording Microelectrodes
- Interneuronal Circuits underlying Voluntary Movements in Normal and Injured Spinal Cord
- Cortical Control of Neural Prostheses
- Development of Virtual Reality Headgear/Gloves for use in Administration of Cognitive and Motor Tasks

- Insulating Biomaterials
- Micromachined Stimulating Microelectrode Arrays
- Emerging Concepts in Spinal Cord Injury
- Biomaterials for the Central Nervous System
- Pilot Studies for Re-establishing Connectivity in Spinal Cord Injury

- The Aging Senses: Relationships among Multiple Sensory Systems, led by NIA
- Bioengineering Nanotechnology Initiative, with several ICs
- Bioengineering Research Partnerships, with several ICs
- Bioengineering Research Grants, with several ICs
- Research on Tissue Engineering, with several ICs
- SBIR/STTR Study and Control of Microbial Biofilms, with several ICs
- Earth-based Research Relevant to the Space Environment, with several ICs

Planned Initiatives

- Functional Imaging and Interventions for Cognitive Deficits after Traumatic Brain Injury

Workshops/Conferences/Meetings

- Mini-Series on Spinal Cord Injury: Clinical applications – Development of improved outcome measures; Imaging changes in the CNS following spinal cord injury (December 2001)
- Mini-Series on Spinal Cord Injury: Cell therapy and gene therapy in the damaged spinal cord (April 2001)
- Mini-Series on Spinal Cord Injury: Synapse formation and plasticity in regenerating systems (December 2000)
- 31st Annual Neural Prostheses Workshop (October 25-27, 2000)
- Mini-Series on Spinal Cord Injury: To sprout or not to sprout – scars, cysts, inhibitory factors and other barriers to regeneration in spinal cord injury (August 2000)
- Pain after Spinal Cord Injury: Maladaptive Plasticity (August 2000)
- BECON Conference on Nanotechnology (June 25-26, 2000)
- Mini-Series on Spinal Cord Injury: Functional and dysfunctional spinal circuitry – Role of rehabilitation and neural prostheses (June 13-15, 2000)
- Traumatic Brain Injury: Acute Treatment/Long-term Outcome (May 2000)
- Mini-Series on Spinal Cord Injury: Damage Control – Inflammation and cell response following spinal cord injury (April 5-6, 2000)
- Technology Assessment Conference on Improving Medical Implant Performance through Retrieval Information (January 10-12, 2000)
- Adaptive Learning: Interventions for Verbal and Motor Deficits (November 15-16, 1999)
- 30th Annual Neural Prostheses Workshop (October 12-14, 1999)
- Neural Stem Cells: Promoting Repair and Plasticity of the Nervous System (July 1999)

Neural Environment

NINDS facilitates research to increase our knowledge of glia, cerebrovascular and immune cells, and infectious agents in the healthy and diseased system.

Examples of disease areas include stroke and vascular diseases, tumors (glioblastomas, meningiomas, neurofibromas), infections (meningitis, poliomyelitis and its sequelae, neuro-AIDs, Lyme disease, autoimmune disorders (multiple sclerosis, myasthenia gravis, Guillain-Barre syndrome, CIDP, paraneoplastic syndromes), and polymyositis.

Recent and Ongoing Initiatives

- Mechanisms of HIV-1 trafficking in the CNS
- Specialized Neuroscience Research Programs on Health Disparity: HIV and the Nervous System
- Central Nervous System as the HIV Sanctuary
- NINDS Brain Tumor Genome Anatomy Project
- Neuroimaging in HIV Infection
- Development of Assay for Creutzfeldt-Jakob Disease
- National Neuro-AIDS Tissue Consortium
- Neuroimaging Analyses as Correlates of HIV/CNS Disease
- Non-Human Primate Models for HIV/CNS Disease
- Animal Care and Housing Support Services for Study of Slow, Latent and Temperate Virus Infections of Nervous System Caused by Conventional and Unconventional Viruses
- The Role of Microglia in Normal and Abnormal Immune Responses of the Nervous System
- Mechanism in HIV Dementia and other CNS Diseases
- NINDS/NCI Brain Tumor Progress Review Group

- Impact Of HAART On HIV/CNS Disease, led by NIMH
- Thrombosis of the Arterial and Cerebral Vasculature: New Molecular Genetic Concepts for Prevention and Treatment, led by NHLBI
- Hyper-accelerated Award/Mechanisms in Immunomodulation Trials, led by NIAID
- HIV Co-receptors in the CNS, led by NIDA
- New Imaging Technologies for Autoimmune Diseases, with several ICs
- Target Organ Damage in Autoimmune Disease, with several ICs
- Environment/Infection/Gene Interactions in Autoimmune Disease, with several ICs

Planned Initiatives

- Neuroprotective CNS Barriers
- Common Neuropathogenic Mechanisms Underlying HIV-Associated Dementia, Neurodegenerative Disorders and CNS Autoimmune Diseases
- Brain Tumor Molecular Signature Project
- HIV-1 Infection and the Peripheral Nervous System

Workshops/Conferences/Meetings

- Stroke Genetics Workshop (date pending)
- Glioma Cell Biology (date pending)
- Protein Fingerprinting of Neurodegenerative Diseases (date pending)
- International Workshop on Diagnostics for Transmissible Spongiform Encephalopathy (TSE) Agents (September 21-22, 2000)
- HIV and the Peripheral Nervous System (September 18-19, 2000)
- Roundtable for Progress Review Group on Brain Tumors (July 5-8, 2000)
- Impact of HAART on HIV-induced Disease of the Nervous System (May 24-25, 2000)
- Research Opportunities on Inflammatory Myopathies (April 5-6, 2000)
- Roundtable for Progress Review Group on Brain Tumors (March 2000)
- Neuro-AIDS Technical Assistance Workshop: Specialized Neuroscience Research Programs (November 29-30, 1999)
- Glioma Cell Biology Workshop (Summer 1999)
- HIV and the Nervous System, (April 1999)

Systems and Cognitive Neuroscience

NINDS plans and implements research in the neurobiology of higher cognitive functions and other complex behaviors.

Examples of disease areas include pain, developmental learning disabilities, autism, dementia, movement disorders, dystonias, sleep disorders (narcolepsy, restless leg syndrome) and peripheral neuropathies.

Recent and Ongoing Initiatives

- Neurobiology of Diabetic Complications
- Neurological Complications Of Diabetes
- Development of Pain Model System and Assessment Tools
- Improved Methods and Standardization for Rodent Neurophysiological Recording
- Novel Therapy for Sleep and Circadian Disorders

- The Human Brain Project (Neuroinformatics): Phase I & Phase II, with several ICs
- The Role of Growth Factors in the Development of Diabetes Complications, led by NIDDK
- Research on Care at the End of Life, with several ICs
- Phenotypic Characterization of Sleep in Mice led by NHLBI
- Centers for Mind/Body Interactions and Health, with several ICs
- Biobehavioral Pain Research, with several ICs
- Building Interdisciplinary Research Careers in Women's Health, with several ICs

Workshops/Conferences

- New Directions in Pain Research II (date pending)
- Pain and Epilepsy: Common Drugs, Common Mechanisms (date pending)
- Human Brain Project: Progress in Informatics Research (date pending)

- Pain after Spinal Cord Injury: Maladaptive Plasticity (June 7, 2000)
- Computational and Theoretical Neuroscience: From Synapse to Circuitry (April 2000)
- Adaptive Learning: Interventions for Verbal and Motor Deficits (November 15-16, 1999)
- The Dopamine Connections in Restless Legs Syndrome, Periodic Limb Movement Disorder, Parkinsonism and Narcolepsy: Toward a Better Understanding of Common Mechanisms in Uncommon Disorders (November 10-11, 1999)
- Symposium on Neural Plasticity: New Insights into Persistent Pain States (as part of Pain Society Meeting) (October 21-24, 1999)
- Trigeminal Neuralgia: Opportunities for Research and Treatment (September 1999)
- Diabetic Neuropathy (September 1999)
- Biomarkers and Surrogate Endpoints: Advancing Clinical Research and Applications (April 1999) (included topic of pain)

Channels, Synapses, Circuits

NINDS initiates and promotes basic, translational, and clinical research in channels, synapses, and neural circuits that underlie normal brain functions and dysfunctions related to neurological disorders such as epilepsy.

Examples of diseases covered include epilepsy, pain, and the various disorders of ion channels, including several forms of ataxia, seizure disorders, and neuromuscular diseases.

Recent and Ongoing Initiatives

- Innovations in Translational Epilepsy Research for Junior Investigators
- Development of Systems to Express Functional Eukaryotic Membrane Proteins for Crystallization
- The Human Brain Project (Neuroinformatics): Phase I & Phase II, with several ICs
- Structural Biology of Membrane Proteins, led by NIGMS

Planned Initiatives

- Future Genetic Strategies for Epilepsy

Workshops/Conference

- Pain and Epilepsy: Common Drugs, Common Mechanisms (date pending)
- Channelopathy: Abnormality of Channel Function Underlying Neurological Disease States (date pending)
- The Human Brain Project/Informatics Annual Meeting (June 1-2, 2000)
- Computational and Theoretical Neuroscience: From Synapse to Circuitry (April 28, 2000)
- NIMH and NINDS Joint Workshop on Neuroimaging Informatics (April 24, 2000)
- White House Conference on “Curing Epilepsy: Focus on the Future” (March 30-31, 2000)
- Future Genetic Strategies for Epilepsy (March 1999)

Experimental Therapeutics and Clinical Trials

Promoting clinical research is a major priority for NINDS. Prior to the development of the strategic plan, the Institute formed a working group to monitor progress and propose new mechanisms and initiatives. A new position of Associate Director for Clinical Trials provides a focus for these efforts, and recruitment of a new Clinical Director for the intramural research program will provide further stimulus for NINDS to lead the way in translational research, experimental therapeutics, and clinical trials.

Current Major Clinical Trials

- African-American Antiplatelet Stroke Prevention Study (AAASPS)
- Androgen Effects on Cognition in Turner Syndrome
- Arterial Pressure Reduction on CBF & Oxygen in Acute ICH
- Beneficial Effects of Antenatal Magnesium (BEAM)
- Carotid Revascularization Endarterectomy vs. Stenting Trial (CREST)
- Clinical Trials with Solid Intracranial Tumors
- Coenzyme Q₁₀ in Early Parkinson's Diseases (QE2)
- Coenzyme Q10 and Remacemide: Evaluation in Huntington's Disease (CARE-HD)
- Deep Brain Stimulation for Parkinson's Disease
- Double-Blind Controlled Trial of Nigral Grafting in Parkinson's Disease
- Earlier vs. Later L-Dopa in Parkinson's Disease (ELLDOPA)
- Early Hemicraniectomy to Manage Traumatic Brain Injury
- Efficacy of the Ketogenic Diet - A Blinded Study
- Efficacy of a Family Telephone Intervention for Stroke
- Embryonic Dopamine Cell Implants for Parkinsonism
- Estrogen Effects on Cognition in Turner Syndrome
- GM1 Ganglioside Effects on Parkinson's Disease
- Hemicraniectomy for Swelling from Cerebral Infarction
- Hypothermia During Intracranial Aneurysm Surgery
- Hypothermia for Severe Traumatic Brain Injury in Children
- Hyperventilation on CBF & Oxygenation in Acute TBI
- Inclusion Body Myositis: Pilot Study of β -Interferon
- Losigamone as Monotherapy in Treatment of Complex Partial Seizures
- Magnesium Sulfate for Neuroprotection after Brain Trauma
- Mayo Stroke Center
- National Acute Brain Injury Study – Hypothermia
- Neonatal Encephalopathy Treated By Moderate Hypothermia
- Neurologic AIDS Research Consortium (NARC)
- Neuromuscular Plasticity after Spinal Cord Injury
- PET and MRI Imaging of Persistent Lyme Encephalopathy
- Pilot Study of TNK-TPA in Acute Ischemic Stroke
- Prehospital Treatment of Status Epilepticus
- Psychosocial Intervention in Stroke Recovery
- Pulse Therapy Trial in β -Interferon Resistant Active MS

- Randomized Indomethacin GMH/IVH Prevention Trial
- Secondary Prevention in Small Subcortical Strokes (SPS3)
- Stroke Outcome and Neuroimaging of Intracranial Stenosis
- T-cell Vaccine: A Clinical Trial for Progressive MS
- Treatment of ADHD in Children with Tourette's Syndrome
- Treatment of AIDS Vacuolar Myelopathy with Methionine
- Vitamin Intervention for Stroke Prevention (VISP)
- Warfarin Antiplatelet Recurrent Stroke Study (WARSS)
- Women's Estrogen for Stroke Trial (WEST)
- Warfarin vs. Aspirin for Intracranial Arterial Stenosis (WASID)

Recent and Ongoing Initiatives

- Establishment of separate Clinical Trials Review Group
- Clinical Interventions for Managing the Symptoms of Stroke
- Research on Ethical Issues in Human Studies
- Alzheimer's Disease Clinical Trial Planning Grant
- Alzheimer's Disease Pilot Clinical Trials
- NINDS Clinical Trial Planning Grant
- Pilot Clinical Trial Grant For Neurological Disease
- The Early Evaluation of Anticonvulsant Drugs

Workshops/Conferences/Meeting

- National Symposium on Outcomes in Clinical Neurological Research (date pending)
- Clinical Trial Design for Antiepileptogenic vs. Antiepileptic Agents (at American Epilepsy Society 1999 Annual Meeting, December 8, 1999)

Neurogenetics

NINDS supports and encourages research on a variety of topics in neurogenetics, ranging from gene discovery and intervention studies in specific diseases to NIH-wide genomics efforts.

Recent and Ongoing Initiatives

- High Throughput Analysis of Gene Expression Patterns in the Nervous System
- Technologies For Gene Expression Analysis In The Nervous System
- High Throughput Analysis of Gene Expression Patterns in the Nervous System
- NINDS Supplements for DNA Microarray Facilities and Microarray Analysis
- Gene Expression Profiling in the Nervous System, led by NIMH
- Technologies For Generation Of Full-Length Mammalian cDNA, with several ICs
- Rat Genome Database, with several ICs
- Mouse Mutagenesis And Phenotyping: Nervous System And Behavior, led by NIMH
- Phenotyping the Mouse Nervous System and Behavior, led by NIMH
- Phenotypic Characterization of Sleep in Mice, led by NHLBI

- Mutagenesis Screens/Phenotyping Tools for Zebrafish, with several ICs

Planned Initiatives

- Microarray Centers for Research on the Nervous System

Workshops/Conferences/Meetings

- Stroke Genetics Workshop (date pending)
- Gene Therapy in the Nervous System (September 2000)
- Batten Disease: Gene Therapy Initiative Conference (May 8-9, 2000)
- Defining the Future of Neurofibromatosis Research (May 4-5, 2000)
- Genetic Basis for Brain Development and Dysfunction (March 18-22, 2000)
- Future Genetic Strategies for Epilepsy (March 1999)

Research Resources

Throughout the strategic planning process, NINDS staff and advisors have noted the critical importance of providing sufficient manpower, technology, and infrastructure to support modern neuroscience research and to compensate for the effects of past funding constraints. In addition to the specific initiatives and plans noted below, the Institute has created a new position of Associate Director for Technology Development to provide leadership in many of these efforts.

Training

Recent and Ongoing Initiatives

(all in collaboration with one or several ICs)

- Jointly Sponsored NIH Predoctoral Training Program in the Neurosciences
- Mentored Clinical Scientist Development Award (K08)
- Mentored Patient-Oriented Research Career Development Award
- Midcareer Investigator Award in Patient-Oriented Research (K24)
- Independent Scientist Award (K02)
- Mentored Research Scientist Development Award (K01)
- Career Development Awards: Child Abuse and Neglect Research
- The Role of the Environment in Parkinson's Disease: Career Development Programs for Physician-Scientists
- Mentored Quantitative Research Career Development Award
- Building Interdisciplinary Research Careers in Women's Health

Planned Initiatives

- Individual Predoctoral Fellowship in the Neurosciences
- Parkinson's Disease Physician Education Initiative

Infrastructure

Recent and Ongoing Initiatives

- NINDS Administrative Supplements for Research Infrastructure
- Specialized Neuroscience Research Programs At Minority Institutions
- Specialized Neuroscience Research Programs on Health Disparity: HIV and the Nervous System
- Technologies For Gene Expression Analysis In The Nervous System
- Development of Virtual Reality Headgear/Gloves for use in Administration of Cognitive and Motor Tasks
- Micromachined Stimulating Microelectrode Arrays
- NINDS Supplements for DNA Microarray Analysis
- Biomaterials for the Central Nervous System

- Technologies For Generation Of Full-Length Mammalian cDNA, with several ICs
- Rat Genome Database (with several ICs)
- SBIR/STTR Study and Control of Microbial Biofilms, with several ICs
- Academic Research Enhancement Award, NIH-wide program
- Research on Tissue Engineering, with several ICs
- Bioengineering Nanotechnology Initiative, with several ICs
- The Human Brain Project (Neuroinformatics): Phase I & Phase II, with several ICs
- Mutagenesis Screens/Phenotyping Tools for Zebrafish, with several ICs

Planned Initiatives

- Microarray Centers for Research on the Nervous System

Workshops/Conferences/Meetings

- Developing Quantitative Tools for Assessment of Movement Impairment in Children (date pending)
- Protein Microassays in Brain and Nervous Tissue (date pending)
- NIH and NSF Funding and Research Opportunities (at Society for Neuroscience meeting) (November 2000)
- Gene Therapy in the Nervous System (September 2000)
- Optical Imaging: Bench to Bedside (September 2000)
- BECON Conference on Nanotechnology (June 2000)
- 6th International Conference on Functional Mapping of the Human Brain: Functional Imaging in Development (June 2000)
- The Human Brain Project/Informatics Annual Meeting (June 1-2, 2000)
- NIMH and NINDS Joint Workshop on Neuroimaging Informatics (April 24, 2000)
- Assays for High-Throughput Screening of Therapeutic Drug Candidates for Amyotrophic Lateral Sclerosis (ALS) and Spinal Muscular Atrophy (SMA) (April 10-11, 2000)
- Technology Assessment Conference on Improving Medical Implant Performance through Retrieval Information (January 2000)

- Neuro-AIDS Technical Assistance Workshop: Specialized Neuroscience Research Programs (November 29-30, 1999)
- NIH and NSF Funding and Research Opportunities (at Society for Neuroscience meeting (October 1999))
- Workshop on Optical Imaging (September 1999)
- Pediatric Functional Neuroimaging Workshop (June 1999)
- NIRS as a Cerebral Function Monitor (May 1999)

Integrated Neuroscience Community

The NINDS Intramural program has recruited leading senior neuroscientists to spearhead enhanced efforts in neurogenetic diseases, brain imaging, and stroke treatment. The Institute has also hired some of the nation's best young scientists studying the development of the nervous system, the structure and function of ion channels, and the molecular biology of synapses. The Institute is continuing efforts to enhance the Intramural Clinical programs, to hire a new clinical director, to enhance collaborations with other ICs, and to provide laboratory space that will promote collaborative approaches to neuroscience research on the NIH campus. Ongoing and planned intramural clinical trials cover a broad spectrum of rare and common neurological disorders.

Intramural Workshops

- International Workshop on Blepharospasm (November 16-17, 2000)
- International Symposium on Myoclonus, Paroxysmal Dyskinesias, and Related Disorders (October 2000)
- International Scientific Conference on the Spinal Cord in Health and Disease (September 2000)
- Workshop on HTLV-1 (March 2000)
- The Role of MRI as the Surrogate Outcome Measure for Multiple Sclerosis (November 4-6, 1999)
- Neiman Pick Type C Disease Symposium (October 14-16, 1999)
- Pelizaeus-Merzbacher Disease and the Allelic Disorder, X-linked Spastic Paraplegia Type 2 (October 14-15, 1999)
- Phantom Limb Pain (Fall 1999)

Appendix

Master List of Current Initiatives and Workshops

(see <http://grants.nih.gov/grants/funding/funding.htm> for full text of these and new initiatives)

Recent and Ongoing NINDS Led Initiatives

4/24/00	NS-00-007	NINDS Administrative Supplements for DNA Microarray Analysis
4/24/00	NS-01-005	The Role of Parkin and Related Proteins in Parkinson's Disease
3/27/00	NS-01-006	Innovations in Translational Epilepsy Research for Junior Investigators
3/9/00	NS-01-004	Spinal Muscular Atrophy, Amyotrophic Lateral Sclerosis, and other Motor Neuron Disorders
3/9/00	NS-01-003	Mitochondrial Function and Neurodegeneration
3/9/00	NS-01-002	The Function of Synaptic Proteins in Synapse Loss and Neurodegeneration
3/9/00	NS-01-001	Pilot Studies for Re-establishing Connectivity in Spinal Cord Injury
3/1/00	NS-00-006	Biomaterials for the Central Nervous System
2/22/00	PAS-00-065	Mechanisms in HIV Dementia and other CNS Diseases
1/19/00	NS-00-005	The Restoration of Hand and Arm Function by Functional Neuromuscular Stimulation
1/13/00	NS-00-002	Neurobiology of Diabetic Complications
1/11/00	RFP-NS-00-05	Analysis of Gene Expression Patterns in the Nervous System
12/15/99	PA-00-029	The Role of Microglia in Normal and Abnormal Immune Responses of the Nervous System
12/1/99	RFP-NS-00-03	Biomaterials for the Microelectrode Neural Interface
11/23/99	RFP-NS-00-002	Thin-Film Intracortical Recording Microelectrodes
9/27/99	RFA NS-99-006	Consortium on Deep Brain Stimulation for the Treatment of Parkinson's Disease and Other Neurological Disorders
9/27/99	RFA NS-99-008	Interneuronal Circuits Underlying Voluntary Movements in Normal and Injured Spinal Cord
9/21/99	RFA-NS-00-001	Specialized Neuroscience Research Programs at Minority Institutions

8/26/99	RFA NS-99-007	Specialized Neuroscience Research Program on Health Disparity: HIV and the Nervous System
6/14/99	RFI NS-99-02	High Throughput Analysis of Gene Expression Patterns in the Nervous System
6/10/99	PAS-99-080	Exploratory Grants in Pediatric Brain Disorders: Integrating the Sciences
2/2/99	RFP-NS-99-11	Development of Assay for Creutzfeldt-Jakob Disease
12/22/98	RFA NS-99-005	Neurological Complications of Diabetes
12/18/98	RFA NS-99-004	Morris K. Udall Parkinson's Disease Research Centers of Excellence
12/18/98	RFP-NS-99-04	Insulating Biomaterials
12/18/98	RFP-NS-99-03	Cortical Control of Neural Prostheses
12/11/98	RFA NS-99-003	Technologies for Gene Expression Analysis In The Nervous System
9/4/98	RFA NS-99-002	Central Nervous System as the HIV Sanctuary
9/4/98	PHS SBIR Contract	Neuroimaging in HIV Infection
7/9/98	RFP-NS-98-11	Micromachined Stimulating Microelectrode Arrays
5/21/98	RFP-NS-98-	Animal Care and Housing Support Services for Study of Slow, Latent and Temperate Virus Infections of the Nervous System Caused by Conventional and Unconventional Viruses; and; Maintenance of a Breeding Colony of Rhesus Monkeys for Intramural Research
5/11/98	RFI-NS-98-01	Pediatric Anatomic Neuroimaging Data Base Initiative
3/10/98	RFP-NS-98-04	Development of Virtual Reality Headgear/Gloves for Use in Administration of Cognitive and Motor Tasks
8/29/97	PAR-97-102	NINDS Clinical Trial Planning Grant
8/29/97	PAR-97-103	Pilot Clinical Trial Grant for Neurological Disease
6/30/94- (Since 1974)	NO1-NS-42311-00	The Early Evaluation of Anticonvulsant Drugs

Recent and Ongoing Initiatives Led by Other Institutes/Centers

4/6/00	PA-00-008	Earth-bases Research Relevant to the Space Environment – 10 ICs, NASA
2/16/00	RFA-HD-00-004	Mutagenesis Screens/ Phenotyping Tools for Zebrafish – 16 ICs
1/18/2000	RFA-HD-00-001	Rett Syndrome: Genetics, Pathophysiology, and Biomarkers – NICHD, with NINDS
1/18/2000	RFA- MH-00-010	Mechanisms of HIV-1 Trafficking in the CNS – NIMH, with NINDS
1/14/2000	RFA-OD-00-003	Transitional Career Development Award in Women's Health Research - ORWH with 15 other IC's
1/5/2000	PA-PAR-00-037	Jointly Sponsored NIH Predoctoral Training Program in the Neurosciences - 9 ICs
1/5/2000	RFA-HD-00-001	Developmental Pharmacology: Ontogeny of Drug Metabolizing Enzymes, Drug Transporters, Drug Receptors, and Ion Channels – NICHD, with NIDA, NINDS
12/15/99	RFA MH-00-003	Impact of HAART on HIV/CNS Disease-NIMH, with NINDS
12/2/99	PA-00-018	Bioengineering Nanotechnology Initiative – NCI with 18 other ICs
12/2/99	PA-00-019	Mentored Research Scientist Development Award-14 ICs
12/2/99	PA-00-020	Independent Scientist Award-14 ICs
11/30/99	PAS-00-006	Bioengineering Research Partnerships-NCI with 18 other ICs
11/24/99	RFA AI-00-005	Hyperaccelerated Award/Mechanisms in Immunomodulation Trials-NIAID with 6 other ICs
11/22/99	RFA MH-00-002	Gene Expression Profiling in the Nervous System- NIMH with 6 other ICs
10/8/99	PA-00-003	Mentored Clinical Scientist Development Award-17 ICs included
10/8/99	PA-00-004	Mentored Patient-Oriented Research Career Development Award-17 ICs included
10/8/99	PA-00-005	Midcareer Investigator Award in Patient-Oriented Research-17 ICs included
9/21/99	RFA ES-00-002	The Role of the Environment in Parkinson's Disease-NIEHS, with NINDS

9/21/99	RFA ES-00-003	The Role of the Environment in Parkinson's Disease: Career Development Programs for Physician-Scientists-NIEHS, with NINDS
9/7/99	RFA OD-99-008	Building Interdisciplinary Research Careers in Women's Health-ORWH with 12 ICs and AHCPR
9/2/99	PA-99-159	The Role of Growth Factors in the Development of Diabetes Complications-NIDDK with 4 other ICs
8/5/99	PA-99-133	Career Development Awards: Child Abuse and Neglect Research-NIMH with 4 other ICs
8/5/99	PAR-99-138	The Human Brain Project (Neuroinformatics): Phase I & Phase II)-NIMH with 11 other ICs, NSF, DOE and NASA
6/30/99	PA-99-123	The Aging Senses: Relationships Among Multiple Sensory Systems: NIA with 5 other ICs
4/21/99	PA-99-084	SBIR/STTR Study and Control of Microbial Biofilms-NHLBI with 10 other ICs
4/20/99	PA-99-088	Clinical Interventions for Managing the Symptoms of Stroke-NINR with 4 other ICs
4/15/99	RFA HL-99-015	Thrombosis of the Arterial and Cerebral Vasculature: New Molecular Genetic Concepts for Prevention and Treatment-NHLBI
4/15/99	RFA HL-99-015	Thrombosis of the Arterial and Cerebral Vasculature: New Molecular Genetic Concepts for Prevention and Treatment-NHLBI
4/13/99	PA-99-087	Mentored Quantitative Research Career Development Award-NHLBI with 14 other ICs
3/31/99	PA-99-079	Research on Ethical Issues in Human Studies-NCI with 20 other ICs
3/31/99	RFA MH-99-007	Mouse Mutagenesis and Phenotyping: Nervous System and Behavior-NIMH with 6 other ICs
3/16/99	RFA OD-99-006	Research on Child Neglect-OBSSR with 4 other ICs
3/5/99	RFA CA-99-005	Technologies For Generation of Full-Length Mammalian cDNA-NCI with 15 other ICs
3/5/99	RFA HL-99-013	Rat Genome Database-NHLBI with 10 other ICs
2/26/99	RFA AR-99-003	Target Organ Damage in Autoimmune Disease-NIAMS with 11 other ICs
2/26/99	RFA MH-99-012	Neuroimaging Analyses as Correlates of HIV/CNS Disease-NIMH
2/11/99	PA-99-062	Academic Research Enhancement Award-NCI with 20 other ICs
2/11/99	RFA AI-99-004	New Imaging Techniques for Autoimmune Diseases-NIAID with 10 other ICs

2/4/99	RFA ES-99-003	Environment/Infection/Gene Interactions in Autoimmune Disease-NIEHS with 11 other ICs
1/29/99	PAS-99-054	Xenobiotics and Cell Death/Injury in Neurodegenerative Disease-NIEHS, with NIMH, NIA, NINDS
1/29/99	PA-99-056	HIV Co-receptors in the CNS-NIDA, with NIMH, NINDS
1/29/99	RFA MH-99-009	Non-Human Primate Models for HIV/CNS Disease- NIMH, with NINDS
1/22/99	RFA MH-99-006	Phenotyping the Mouse Nervous System and Behavior-NIMH with 6 other ICs
1/22/99	RFA OD-99-005	Centers for Mind/Body Interactions and Health - OBSSR with 12 other ICs
1/20/99	RFA NR-99-004	Research on Care at the End of Life-NINR with 8 other ICs
1/14/99	PA-99-039	Alzheimer's Disease Clinical Trial Planning Grant-NIA with NIMH, NINDS
1/14/99	PA-99-038	Alzheimer's Disease Pilot Clinical Trials-NIA with NIMH, NINDS
1/12/99	PAS-99-037	Rett Syndrome: Genetics, Pathophysiology and Biomarkers-NICHHD
12/18/98	RFA HL-99-001	Phenotypic Characterization of Sleep in Mice-NHLBI with 3 other ICs
12/4/98	PA-99-024	Research on Tissue Engineering-NIAMS with 10 other ICs
11/27/98	PA-99-021	Biobehavioral Pain Research-NINR with 10 other ICs
10/29/98	PAR-99-009	Bioengineering Research Grants-NCI with 19 other ICs
10/16/98	PA-99-004	Structural Biology of Membrane Proteins-NIGMS with 5 other ICs

Workshops

February 1999	Child Abuse and Neglect
March 1999	Deep Brain Stimulation for Parkinson's Disease Working Group
March 1999	Parkinson's Disease Center Investigator's Meeting
March 1999	Progressive Supranuclear Palsy International Meeting
March 1999	Future Genetic Strategies for Epilepsy
April 1999	Batten Disease Workshop: New Directions in Research for the Neuronal Ceroid Lipofuscinoses
April 1999	HIV and the Nervous System
April 1999	Biomarkers and Surrogate Endpoints: Advancing Clinical Research and Applications
May 1999	Spinal Muscular Atrophy Workshop
May 1999	NIRS as a Cerebral Function Monitor
Summer 1999	Glioma Cell Biology Workshop
June 1999	International Freidreich's Ataxia Conference
June 1999	Pediatric Functional Neuroimaging Workshop
June 1999	International Sturge-Weber Syndrome Symposium
July 1999	Neural Stem Cells: Promoting Repair and Plasticity of the Nervous System
July 1999	International Conference on Batten Disease
Fall 1999	Phantom Limb Pain
September 1999	Diabetic Neuropathy
September 1999	Trigeminal Neuralgia: Opportunities for Research and Treatment
September 1999	Workshop on Optical Imaging
September 1999	Inter-Institute Invitational Conference on Coordinating Neuroimaging and Functional Paradigms for Understanding Pediatric Neurodevelopment
October 1999	30 th Annual Neural Prostheses Workshop
October 1999	Pelizaeus/Merzbeher Disease and the allelic Disorder, X-linked Spastic Paraplegia Type 2
October 1999	Neiman Pick Type C Disease Symposium
October 1999	Symposium on Neural Plasticity: New Insights into Persistent Pain States (as part of the Pain Society meeting)
October 1999	NIH and NSF Funding and Research Opportunities (at Society for Neuroscience Meeting)
November 1999	The Role of MRI as the Surrogate Outcome Measure for Multiple Sclerosis
November 1999	Treatments for People with Autistic and Other Pervasive Developmental Disorders: Research Perspectives
November 1999	The Dopamine Connections in Restless Legs Syndrome, Periodic Limb Movement Disorder, Parkinsonism and Narcolepsy: Toward a Better Understanding of Common Mechanisms in Uncommon Disorders

November 1999	Adaptive Learning: Interventions for Verbal and Motor Deficits
November 1999	Neuronal Ceroid Lipofuscinoses Research Association Actions for Therapy Workshop
November 1999	Neuro-AIDS Technical Assistance Workshop: Specialized Neuroscience Research Programs
November 1999	Neurobiology of Ataxia-Teleangiectasia (A-T)
December 1999	Clinical Trial Design for Antiepileptogenic vs. Antiepileptic Agents (at American Epilepsy Society 1999 Annual Meeting)
January 2000	Parkinson's Disease Research Agenda: Progress and Five Year Plan
January 2000	Technology Assessment Conference on Improving Medical Implant Performance through Retrieval Information
March 2000	Workshop on HTLV-1
March 2000	Parkinson's Disease Center Investigator's Meeting
March 2000	Symposium on Hereditary Spastic Paraplegias
March 2000	Genetic Basis for Brain Development and Dysfunction
March 2000	White House Conference on "Curing Epilepsy: Focus on the Future"
March 2000	Brain Fatty Acid Uptake, Utilization, and Relevance to PBDS
March 2000	Roundtable for Progress Review Group on Brain Tumors
April 2000	Assays for High-Throughput Screening of Therapeutic Drug Candidates for Amyotrophic Lateral Sclerosis (ALS) and Spinal Muscular Atrophy (SMA)
April 2000	Mini-Series on Spinal Cord Injury: Damage Control – Inflammation and cell response following spinal cord injury
April 2000	Computational and Theoretical Neuroscience: From Synapse to Circuitry
April 2000	Research Opportunities on Inflammatory Myopathies
April 2000	NIMH and NINDS Joint Workshop on Neuroimaging Informatics
May 2000	Defining the Future of Neurofibromatosis Research
May 2000	Batten Disease: Gene Therapy Initiative Conference
May 2000	Duchenne Muscular Dystrophy Workshop
May 2000	Halloworden-Spatz Syndrome Workshop
May 2000	Traumatic Brain Injury: Acute Treatment/Long term Outcome
May 2000	Impact of HAART on HIV-induced Disease of the Nervous System
June 2000	BECON Conference on Nanotechnology
June 2000	6 th International Conference on Functional Mapping of the Human Brain: Functional Imaging in Development
June 2000	Mini-Series on Spinal Cord Injury: Functional and dysfunctional spinal circuitry – Role of rehabilitation and neural prostheses
June 2000	Cerebral Blood Flow and Development and Dysfunction
June 2000	The Human Brain Project/Informatics Annual Meeting
June 2000	Post-Resuscitation and Initial Utility in Life Saving Efforts (PULSE)

July 2000	Roundtable for Progress Review Group on Brain Tumors
August 2000	Mini-Series on Spinal Cord Injury: To sprout or not to sprout – scars, cysts, inhibitory factors and other barriers to regeneration in spinal cord injury
August 2000	Pain After Spinal Cord Injury: Maladaptive Plasticity
September 2000	Pediatric Stroke: Development of Strategies for Prevention and Management
September 2000	International Scientific Conference on the Spinal Cord in Health and Disease
September 2000	HIV and the Peripheral Nervous System
September 2000	Gene Therapy in the Nervous System
September 2000	Optical Imaging: Bench to Bedside
September 2000	International Workshop on Diagnostics for Transmissible Spongiform Encephalopathy (TSE) Agents
October 2000	31 st Annual Neural Prostheses Workshops
October 2000	International Symposium on Myoclonus, Paroxysmal Dyskinesias, and Related Disorders
November 2000	NIH and NSF Funding and Research Opportunities (at Society for Neuroscience Meeting)
November 2000	International Workshop on Blepharospasm
December 2000	Mini-Series on Spinal Cord Injury: Synapse formation and plasticity in regenerating systems
April 2001	Mini-Series on Spinal Cord Injury: Cell therapy and gene therapy in the damaged spinal cord
December 2001	Mini-Series on Spinal Cord Injury: Clinical applications – Development of improved outcome measures; Imaging changes in the CNS following spinal cord injury
(date pending)	Stroke Genetics Workshop
(date pending)	Cognitive and Emotional Health Longitudinal Study Meeting
(date pending)	Protein Fingerprinting of Neurodegenerative Diseases
(date pending)	Protein Microassays in Brain and Nervous Tissue
(date pending)	Pain and Epilepsy: Common Drugs, Common Mechanisms
(date pending)	Human Brain Project: Progress in Informatics Research
(date pending)	Glioma Cell Biology
(date pending)	New Directions in Pain Research II
(date pending)	National Symposium on Outcomes in Clinical Neurological Research
(date pending)	Developing Quantitative Tools for Assessment of Movement Impairment in Children
(date pending)	Risk Factors for Autism
(date pending)	Channelopathy: Abnormality of Channel Function Underlying Neurological Disease States